REMARKS

Claims 1, 3-19, and 21-22 are pending in the application.

Independent claims 1 and 19 are amended above to include the features of dependent claims 2 and 20 respectively. Claims 1 and 19 have also been amended to include the limitation that "the estimation of the GMO value being calculated independently to that of the estimation of each LMO value". (see the last line of claim 1 and 19). Basis for this amendment can be found for example in Figure 3, where it is clear that calculation of the GMO (box 109) occurs independently from calculation of the LMO (box 110). Claims 2 and 20 have been cancelled from the application without prejudice.

Independent Claim 21 is amended to overcome the examiners 101 rejection and to include the feature of claim 2 as well as the requirement that the GMO calculation occurs independently of the LMO calculation.

New claim 22 is added to the application.

No new matter has been added to the application by way of these claim amendments.

I. THE SECTION 101 REJECTION OF CLAIM 21

The examiner rejected claim 21 because it is directed to non-statutory subject matter and in particular a computer program.

Claim 21 is amended above to recite a computer readable medium including the computer program.

II. THE OBVIOUSNESS REJECTIONS

The examiner rejected claims 1-4, 16 and 19-21 for being obvious over Egusa (USP 5,237,405) in view of Kondo (EP 0560610). Moreover the examiner rejected claims 7-8, 9, 11-12 and 15 over Egusa and Kondo as applied to claim 1 and further in view of Jones – EP1117251 (claims 7-8), or in further view of Jones and the Tucker article (claims 9 and 11), or in further view of Green (USP 4,403,256).

Pending independent claim 1, as amended above, contains the content of claim 2, along with the additional limitation that the calculation of the GMO is independent from the calculation of each LMO. It can be seen from examination of Egusa that it works in a manner

that of presently amended claim 1. Therefore, as will be explained in more detail below, the claims are patentable over the cited prior art.

Egusa produces motion vectors for various detection regions, as can be seen on Figures 74 and 75. These are broadly like the Local Motion Offset (LMO) vectors as employed in the present invention. Egusa also produces an overall offset vector, a "motion vector of the entire screen", V, as shown in column 46 line 60. A key difference between Egusa and the present invention however is in the way this overall offset vector (or GMO in the present application) is produced. From line 60, column 47 of Egusa, it can be seen that V is produced by the summation of all (non excluded) local vectors. There is no independent, separate calculation of the global motion vector.

The present invention as claimed in amended claim 1 however does a separate calculation of the GMO, rather than merely summing the individual (non-masked) LMOs. This difference has been made explicit in the amended claim 1. The present invention therefore, in calculating the GMO, uses video information from the whole screen area to generate the GMO independently from influence by any LMO. This provides more flexibility, for example to calculate the GMOs and LMOs differently. This is discussed in the application as filed, for example on page 3 line 28 to page 4 line 2. Page 10 of the application as filed also discusses this feature and it gives details of an embodiment wherein the GMO is based on the differences between an image n and a previous image n-1, whereas the LMOs are instead calculated using the differences between an image n and a previous image n-2. This is because movement in a small area of the screen (e.g. of a size corresponding to each LMO) is generally smaller than that detected over a large area (e.g. the whole) of the screen. Therefore movement will generally be more pronounced if the time difference between the two images used in calculation of the LMOs is slightly greater.

Ultimately, Egusa does not allow for such flexibility. The GMO ("V" in Egusa) is fixed by the properties of the individual LMOs that are summed to produce it. Egusa is therefore much more limited compared to the present invention as claimed in claim 1. Claim 1 is therefore non-obvious and inventive over the combination of Egusa and Kondo. Claims 3-18 are similarly non-obvious and patentable by virtue of their dependency upon claim 1. Independent claims 19 and 21 are non-obvious for the same reasons give above for the patentability of independent claim 1 and claims 19 and 21 are amended above to recite at least the same feature discussed

above that is not disclosed in the cited prior art.

Claim 4 is independently patentable over the cited prior art. The examiner rejected claim 4 on the basis that it would be obvious to one of ordinary skill to estimate a GMO of a spatially lower resolution version of image n, on the basis that a lower resolution image is more quickly and easily processed. However, the teaching of Egusa is not conducive to such a technique. Egusa uses a correlation algorithm to determine the movement vector. This is stated in Egusa column 1 lines 27-50. However, if a correlation algorithm is applied to a lower resolution image (effectively a low pass filtering of the image) then the accuracy of the resulting movement vector will be decreased. This is because the correlation technique of Egusa involves comparing image subregions with whole-pixel offsets. A whole-pixel offset at reduced resolution corresponds to a multiple-pixel offset at full resolution, resulting in a loss of accuracy. There are known techniques for LMO measurement to sub-pixel precision but this is relatively expensive computationally and would hence negate the computational advantages of processing at reduced resolution. This would be apparent to a person having ordinary skill in the art. Therefore such a person, on viewing Egusa, would not be tempted to decrease the resolution of the image being processed, as it leads to a reduced quality of movement vector, and hence inferior swing correction. The present invention as claimed in claim 4 is, therefore, non-obvious and patentable over the cited prior art.

Claim 16 is likewise independently patentable over the cited prior art. The present invention as claimed in claim 16 masks out anomalous *pixels* on the basis of noise, or dead pixels etc as described on page 4 lines 4-11. In contrast, Kondo – which is relied upon for disclosing this feature - only masks out larger areas determined by conflicting LMO values in adjacent local regions. Therefore, Kondo is limited to masking out relatively large areas of the image, as multiple local regions will be masked. The present invention is able to mask anomalous areas at the pixel level, so generally leaving more of the image to be used to provide data for generation of the GMO. Therefore claim 16 is non-obvious over the cited prior art for this reason also.

III. NEW CLAIM 22

New claim 22 is added to the application above. New claim 22 is believed to be patentable over the cited prior art for at least the same reasons recited with respect to claim 1 in section II above.

IV. ALLOWABLE SUBJECT MATTER

The Applicant acknowledges that the examiner is prepared to allow claims 5-6, 10, 13-14, and 17-18 should any of the claims be converted into independent form.

CONCLUSION

All pending application claims are believed to be patentable for at least the reasons recited above. Favorable reconsideration and allowance this application is, therefore, courteously solicited.

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